

DISCUSSION OF TABLES I-III

Glygly had a bimodal effect on the latency of convulsions following MSO (Table 1). The shorter onset time was the same as that seen in the Gly treated animals while the longer latency time was equal to that seen with DAVA. Gln appeared to have no effect on the seizure latency when given 45 min. after MSO. When Gln was injected after seizures had begun, however, it appeared to abort the convulsions for about 30 min. Glygly had no effect on seizures induced by ECS given 60 min. later but was significantly effective when ECS was administered after 180 min. (Table 2). The effect produced by Gly did not differ from that produced by saline at either 60 or 180 minutes. Both DAVA and DALA substantially reduced the convulsive response to electric shock. Seventeen of the 25 animals treated with DAVA and 6 of the 10 mice treated with DALA had no seizure while only one of the 26 saline controls did not have a convulsion (Table 2). The effect of GABA as an anticonvulsant was not statistically significant. In another series of animals, it was observed that 6 of 20 mice receiving DAVA (15 mmol/kg of body weight—subcutaneously) were completely protected against PTZ induced convulsions. The seizure latency time was almost doubled in the remaining 14 animals (Table 3).

EXAMPLE VIII

The following test was performed to illustrate the oral administration of the anticonvulsive agent DAVA. Two groups of mice were given either an aqueous solution containing 30 mmol/kg of body weight of DAVA (buffered to pH 4.5) or an equal volume of distilled water via the oral route. 75 minutes after ingestion of the active or control dose the animals were given electroconvulsive shock using the same apparatus as in Example V (18 MA at 380 V for 0.1 sec.) and observed for seizure behavior.

Treatment	No. of Animals With Seizures	No Animals Free of Seizures
Water	17	2
DAVA	6	10

Statistical analysis by Fisher's Exact Probability Test of the results yields $P=0.00328$.

It has also been observed that mice injected subcutaneously with 5-aminopentanoic acid or 5-aminolevulinic acid at 15 mmoles/kg behave as if sedated. The animals display considerably less spontaneous movement around the cage than saline injected control mice. When subjected to noxious stimuli (for example, when the ear clips are attached to the mice before ECS is administered, or when nudged with a blunt probe) the 5-aminopentanoic acid or 5-aminolevulinic acid treated mice show less resistive activity. In addition to being a standard test for anti-convulsant activity, protection against pentylenetetrazole seizures is a standard screening procedure for identifying potential anxiolytic agents. The fact that compounds of the present invention (e.g., 5-aminopentanoic acid) are effective against pentylenetetrazole seizures, indicates that these compounds have significant utility as anxiolytic agents. This observation is confirmed by past experience with prior art anticonvulsant agents, which indicates that many of them have dual roles as anxiolytic

ics and sedatives (e.g., diazepam is a sedative, an anxiolytic and an anticonvulsant; phenobarbital is a sedative, an anxiolytic, and an anticonvulsant). Thus, it is not unusual that the same activity has been identified for the compounds described here.

What is claimed is:

1. A pharmaceutical formulation for controlling seizures in a mammal comprising an orally administrable solid dosage form, said dosage form containing between about 5 and about 750 milligrams of delta-amino valeric acid, and a pharmaceutically acceptable carrier, said acid having a pH of between about 4.0 to about 6.8.

2. The pharmaceutical formulation defined in claim 1 wherein said solid dosage form is a member selected from the group consisting of a pill, a beadlet, a tablet and a capsule.

3. The pharmaceutical formulation of claim 2 further comprising an effective amount of a buffering agent to buffer said formulation to between about pH 4.0 and about pH 6.8.

4. The pharmaceutical formulation of claim 3 wherein the pH of said formulation is about 4.5.

5. The pharmaceutical formulation of claim 3, wherein said carrier comprises an inert material.

6. The pharmaceutical formulation of claim 2, wherein said solid dosage form comprises a capsule containing between about 50 to about 750 milligrams of said delta-amino valeric acid.

7. A pharmaceutical formulation comprising a shapeable rectal suppository containing between about 5 and about 500 milligrams of delta-amino valeric acid in a shapeable base material, said base material having a melting point that will enable the suppository to melt slowly upon retention in the rectal cavity of a mammal.

8. A pharmaceutical formulation for controlling seizures in a mammal comprising an orally administrable solid dosage form, said dosage form containing between about 5 and about 750 milligrams of delta-amino levulinic acid, and a pharmaceutically acceptable carrier, said acid having a pH of between about 4.0 to about 6.8.

9. The pharmaceutical formulation defined in claim 8 wherein said solid dosage form is a member selected from the group consisting of a pill, a tablet, a beadlet, and a capsule.

10. The pharmaceutical formulation of claim 9 further comprising an effective amount of a buffering agent to buffer said formulation to between about pH 4.0 and about pH 6.8.

11. The pharmaceutical formulation of claim 10 wherein the pH of said formulation is about 4.5.

12. The pharmaceutical formulation of claim 10, wherein said solid dosage form comprises a capsule containing between about 50 to about 750 milligrams of said delta-amino levulinic acid.

13. The pharmaceutical formulation of claim 11, wherein said carrier is an inert material.

14. A pharmaceutical formulation comprising a shapeable rectal suppository containing between about 5 and about 500 milligrams of delta-amino levulinic acid in a shapeable base material, said base material having a melting point that will enable such suppository to melt slowly upon retention in the rectal cavity of a mammal.

15. A pharmaceutical formulation comprising an orally administrable liquid containing from about 5 to about 100 milligrams of delta-amino valeric acid per